



- 1 -

SEQUENCE LISTING

<110> Pawlowski, Krzysztof
Reed, John C.
Godzik, Adam

<120> CARD-DOMAIN CONTAINING POLYPEPTIDES,
ENCODING NUCLEIC ACIDS, AND METHODS OF USE

<130> P-LJ 5100

<140> US 10/032,159

<141> 2001-12-19

<150> US 60/257,457

<151> 2000-12-21

<160> 37

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1101

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(1101)

<400> 1

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| atg | tcg | gac | tac | gag | aac | gat | gac | gag | tgc | tgg | aac | gtc | ctg | gag | ggc | 48 |
| Met | Ser | Asp | Tyr | Glu | Asn | Asp | Asp | Glu | Cys | Trp | Asn | Val | Leu | Glu | Gly | |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| ttc | cgg | gtg | acg | ctc | acc | tcg | gtc | atc | gac | ccc | tca | cgc | atc | aca | cct | 96 |
| Phe | Arg | Val | Thr | Leu | Thr | Ser | Val | Ile | Asp | Pro | Ser | Arg | Ile | Thr | Pro | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| tac | ctg | cgg | cag | tgc | aag | gtc | ctg | aac | cct | gat | gat | gag | gag | cag | gtg | 144 |
| Tyr | Leu | Arg | Gln | Cys | Lys | Val | Leu | Asn | Pro | Asp | Asp | Glu | Glu | Gln | Val | |
| | | | 35 | | | | 40 | | | | | 45 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ctc | agc | gac | ccc | aac | ctg | gtc | atc | cgc | aaa | cgg | aaa | gtg | ggt | gtg | ctc | 192 |
| Leu | Ser | Asp | Pro | Asn | Leu | Val | Ile | Arg | Lys | Arg | Lys | Val | Gly | Val | Leu | |
| | | | 50 | | | | 55 | | | | | 60 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ctg | gac | atc | ctg | cag | cgg | acc | ggc | cac | aag | ggc | tac | gtg | gcc | ttc | ctc | 240 |
| Leu | Asp | Ile | Leu | Gln | Arg | Thr | Gly | His | Lys | Gly | Tyr | Val | Ala | Phe | Leu | |
| | | | 65 | | | | 70 | | | | | 75 | | | | 80 |

| | |
|---|-----|
| gag agc ctg gag ctc tac tac ccg cag ctg tac aag aag gtc aca ggc | 288 |
| Glu Ser Leu Glu Leu Tyr Tyr Pro Gln Leu Tyr Lys Lys Val Thr Gly | |
| 85 90 95 | |
| aag gag ccg gcc cgc gtc ttc tcc atg atc atc gac gcg tcc ggg gag | 336 |
| Lys Glu Pro Ala Arg Val Phe Ser Met Ile Ile Asp Ala Ser Gly Glu | |
| 100 105 110 | |
| tca ggc ctg act cag ctg ctg atg act gag gtc atg aag ctg cag aag | 384 |
| Ser Gly Leu Thr Gln Leu Leu Met Thr Glu Val Met Lys Leu Gln Lys | |
| 115 120 125 | |
| aag gtg cag gac ctg acc gcg ctg ctg agc tcc aaa gat gac ttc atc | 432 |
| Lys Val Gln Asp Leu Thr Ala Leu Leu Ser Ser Lys Asp Asp Phe Ile | |
| 130 135 140 | |
| aag gag ctg cgg gtg aag gac agc ctg ctg cgc aag cac cag gag cgt | 480 |
| Lys Glu Leu Arg Val Lys Asp Ser Leu Leu Arg Lys His Gln Glu Arg | |
| 145 150 155 160 | |
| gtg cag agg ctc aag gag gag tgc gag gcc ggc agc cgc gag ctc aag | 528 |
| Val Gln Arg Leu Lys Glu Glu Cys Glu Ala Gly Ser Arg Glu Leu Lys | |
| 165 170 175 | |
| cgc tgc aag gag gag aac tac gac ctg gcc atg cgc ctg gcg cac cag | 576 |
| Arg Cys Lys Glu Glu Asn Tyr Asp Leu Ala Met Arg Leu Ala His Gln | |
| 180 185 190 | |
| agt gag gag aag ggc gcc gcg ctc atg cgg aac cgt gac ctg cag ctg | 624 |
| Ser Glu Glu Lys Gly Ala Ala Leu Met Arg Asn Arg Asp Leu Gln Leu | |
| 195 200 205 | |
| gag att gac cag ctc aag cac agc ctc atg aag gcc gag gac gac tgc | 672 |
| Glu Ile Asp Gln Leu Lys His Ser Leu Met Lys Ala Glu Asp Asp Cys | |
| 210 215 220 | |
| aag gtg gag cgc aag cac acg ctg aag ctc agg cac gcc atg gag cag | 720 |
| Lys Val Glu Arg Lys His Thr Leu Lys Leu Arg His Ala Met Glu Gln | |
| 225 230 235 240 | |
| cgg ccc agc cag gag ctg ctg tgg gag ctg cag cag gag aag gcc ctg | 768 |
| Arg Pro Ser Gln Glu Leu Leu Trp Glu Leu Gln Gln Glu Lys Ala Leu | |
| 245 250 255 | |
| ctc cag gcc cgg gtg cag gag ctg gag gcc tcc gtc cag gag ggg aag | 816 |
| Leu Gln Ala Arg Val Gln Glu Leu Glu Ala Ser Val Gln Glu Gly Lys | |
| 260 265 270 | |
| ctg gac agg agc agc ccc tac atc cag gta ctg gag gag gac tgg cgg | 864 |
| Leu Asp Arg Ser Ser Pro Tyr Ile Gln Val Leu Glu Glu Asp Trp Arg | |
| 275 280 285 | |
| cag gcg ctg cgg gac cac cag gag cag gcc aac acc atc ttc tcc ctg | 912 |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Gln | Ala | Leu | Arg | Asp | His | Gln | Glu | Gln | Ala | Asn | Thr | Ile | Phe | Ser | Leu | |
| 290 | | | | | | 295 | | | | | 300 | | | | | |
| cgc | aag | gac | ctc | cgc | cag | ggc | gag | gcc | cga | cgc | ctc | cgg | tgc | atg | gag | 960 |
| Arg | Lys | Asp | Leu | Arg | Gln | Gly | Glu | Ala | Arg | Arg | Leu | Arg | Cys | Met | Glu | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| gag | aag | gag | atg | ttc | gag | ctg | cag | tgc | ctg | gca | cta | cgt | aag | gac | tcc | 1008 |
| Glu | Lys | Glu | Met | Phe | Glu | Leu | Gln | Cys | Leu | Ala | Leu | Arg | Lys | Asp | Ser | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| aag | atg | tac | aag | gac | cgc | atc | gag | gcc | atc | ctg | ctg | cag | atg | gag | gag | 1056 |
| Lys | Met | Tyr | Lys | Asp | Arg | Ile | Glu | Ala | Ile | Leu | Leu | Gln | Met | Glu | Glu | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| gtc | gcc | att | gag | cgg | gac | cag | agc | aca | caa | atg | gag | ggg | ctg | tga | | 1101 |
| Val | Ala | Ile | Glu | Arg | Asp | Gln | Ser | Thr | Gln | Met | Glu | Gly | Leu | * | | |
| | 355 | | | | | 360 | | | | | 365 | | | | | |

<210> 2
 <211> 366
 <212> PRT
 <213> Homo sapiens

<400> 2

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Met | Ser | Asp | Tyr | Glu | Asn | Asp | Asp | Glu | Cys | Trp | Asn | Val | Leu | Glu | Gly | |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | | |
| Phe | Arg | Val | Thr | Leu | Thr | Ser | Val | Ile | Asp | Pro | Ser | Arg | Ile | Thr | Pro | |
| | | 20 | | | | | | 25 | | | | | 30 | | | |
| Tyr | Leu | Arg | Gln | Cys | Lys | Val | Leu | Asn | Pro | Asp | Asp | Glu | Glu | Gln | Val | |
| | 35 | | | | | 40 | | | | | | 45 | | | | |
| Leu | Ser | Asp | Pro | Asn | Leu | Val | Ile | Arg | Lys | Arg | Lys | Val | Gly | Val | Leu | |
| | 50 | | | | 55 | | | | | 60 | | | | | | |
| Leu | Asp | Ile | Leu | Gln | Arg | Thr | Gly | His | Lys | Gly | Tyr | Val | Ala | Phe | Leu | |
| 65 | | | | 70 | | | | | 75 | | | | | | 80 | |
| Glu | Ser | Leu | Glu | Leu | Tyr | Tyr | Pro | Gln | Leu | Tyr | Lys | Lys | Val | Thr | Gly | |
| | | | 85 | | | | | 90 | | | | | | 95 | | |
| Lys | Glu | Pro | Ala | Arg | Val | Phe | Ser | Met | Ile | Ile | Asp | Ala | Ser | Gly | Glu | |
| | | 100 | | | | | | 105 | | | | | 110 | | | |
| Ser | Gly | Leu | Thr | Gln | Leu | Leu | Met | Thr | Glu | Val | Met | Lys | Leu | Gln | Lys | |
| | 115 | | | | | 120 | | | | | | 125 | | | | |
| Lys | Val | Gln | Asp | Leu | Thr | Ala | Leu | Leu | Ser | Ser | Lys | Asp | Asp | Phe | Ile | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| Lys | Glu | Leu | Arg | Val | Lys | Asp | Ser | Leu | Leu | Arg | Lys | His | Gln | Glu | Arg | |
| 145 | | | | 150 | | | | | | 155 | | | | | 160 | |
| Val | Gln | Arg | Leu | Lys | Glu | Glu | Cys | Glu | Ala | Gly | Ser | Arg | Glu | Leu | Lys | |
| | | | 165 | | | | | 170 | | | | | | 175 | | |
| Arg | Cys | Lys | Glu | Asn | Tyr | Asp | Leu | Ala | Met | Arg | Leu | Ala | His | Gln | | |
| | | 180 | | | | | 185 | | | | | 190 | | | | |
| Ser | Glu | Glu | Lys | Gly | Ala | Ala | Leu | Met | Arg | Asn | Arg | Asp | Leu | Gln | Leu | |
| | 195 | | | | | 200 | | | | | | 205 | | | | |

Glu Ile Asp Gln Leu Lys His Ser Leu Met Lys Ala Glu Asp Asp Cys
 210 215 220
 Lys Val Glu Arg Lys His Thr Leu Lys Leu Arg His Ala Met Glu Gln
 225 230 235 240
 Arg Pro Ser Gln Glu Leu Leu Trp Glu Leu Gln Gln Glu Lys Ala Leu
 245 250 255
 Leu Gln Ala Arg Val Gln Glu Leu Glu Ala Ser Val Gln Glu Gly Lys
 260 265 270
 Leu Asp Arg Ser Ser Pro Tyr Ile Gln Val Leu Glu Glu Asp Trp Arg
 275 280 285
 Gln Ala Leu Arg Asp His Gln Glu Gln Ala Asn Thr Ile Phe Ser Leu
 290 295 300
 Arg Lys Asp Leu Arg Gln Gly Glu Ala Arg Arg Leu Arg Cys Met Glu
 305 310 315 320
 Glu Lys Glu Met Phe Glu Leu Gln Cys Leu Ala Leu Arg Lys Asp Ser
 325 330 335
 Lys Met Tyr Lys Asp Arg Ile Glu Ala Ile Leu Leu Gln Met Glu Glu
 340 345 350
 Val Ala Ile Glu Arg Asp Gln Ser Thr Gln Met Glu Gly Leu
 355 360 365

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<220>
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 <222> (1)...(216)

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 aac gtc ctg gag ggc ttc cgg gtg acg ctc acc tcg gtc atc gac ccc 48
 Asn Val Leu Glu Gly Phe Arg Val Thr Leu Thr Ser Val Ile Asp Pro
 1 5 10 15
 tca cgc atc aca cct tac ctg cgg cag tgc aag gtc ctg aac cct gat 96
 Ser Arg Ile Thr Pro Tyr Leu Arg Gln Cys Lys Val Leu Asn Pro Asp
 20 25 30
 gat gag gag cag gtg ctc agc gac ccc aac ctg gtc atc cgc aaa cgg 144
 Asp Glu Glu Gln Val Leu Ser Asp Pro Asn Leu Val Ile Arg Lys Arg
 35 40 45
 aaa gtg ggt gtg ctc ctg gac atc ctg cag cgg acc ggc cac aag ggc 192
 Lys Val Gly Val Leu Leu Asp Ile Leu Gln Arg Thr Gly His Lys Gly
 50 55 60
 tac gtg gcc ttc ctc gag agc ctg 216
 Tyr Val Ala Phe Leu Glu Ser Leu
 65 70

<210> 4
 <211> 72
 <212> PRT
 <213> Homo sapiens

<400> 4
 Asn Val Leu Glu Gly Phe Arg Val Thr Leu Thr Ser Val Ile Asp Pro
 1 5 10 15
 Ser Arg Ile Thr Pro Tyr Leu Arg Gln Cys Lys Val Leu Asn Pro Asp
 20 25 30
 Asp Glu Glu Gln Val Leu Ser Asp Pro Asn Leu Val Ile Arg Lys Arg
 35 40 45
 Lys Val Gly Val Leu Leu Asp Ile Leu Gln Arg Thr Gly His Lys Gly
 50 55 60
 Tyr Val Ala Phe Leu Glu Ser Leu
 65 70

<210> 5
 <211> 432
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)...(432)

<400> 5
 ctg cgc aag cac cag gag cgt gtg cag agg ctc aag gag gag tgc gag 48
 Leu Arg Lys His Gln Glu Arg Val Gln Arg Leu Lys Glu Glu Cys Glu
 1 5 10 15
 gcc ggc agc cgc gag ctc aag cgc tgc aag gag gag aac tac gac ctg 96
 Ala Gly Ser Arg Glu Leu Lys Arg Cys Lys Glu Glu Asn Tyr Asp Leu
 20 25 30
 gcc atg cgc ctg gcg cac cag agt gag gag aag ggc gcc gcg ctc atg 144
 Ala Met Arg Leu Ala His Gln Ser Glu Glu Lys Gly Ala Ala Leu Met
 35 40 45
 cgg aac cgt gac ctg cag ctg gag att gac cag ctc aag cac agc ctc 192
 Arg Asn Arg Asp Leu Gln Leu Glu Ile Asp Gln Leu Lys His Ser Leu
 50 55 60
 atg aag gcc gag gac gac tgc aag gtg gag cgc aag cac acg ctg aag 240
 Met Lys Ala Glu Asp Asp Cys Lys Val Glu Arg Lys His Thr Leu Lys
 65 70 75 80
 ctc agg cac gcc atg gag cag cgg ccc agc cag gag ctg ctg tgg gag 288
 Leu Arg His Ala Met Glu Gln Arg Pro Ser Gln Glu Leu Leu Trp Glu
 85 90 95
 ctg cag cag gag aag gcc ctg ctc cag gcc cgg gtg cag gag ctg gag 336

Leu Gln Gln Glu Lys Ala Leu Leu Gln Ala Arg Val Gln Glu Leu Glu
100 105 110

gcc tcc gtc cag gag ggg aag ctg gac agg agc agc ccc tac atc cag 384
Ala Ser Val Gln Glu Gly Lys Leu Asp Arg Ser Ser Pro Tyr Ile Gln
115 120 125

gta ctg gag gag gac tgg cgg cag gcg ctg cgg gac cac cag gag cag 432
Val Leu Glu Glu Asp Trp Arg Gln Ala Leu Arg Asp His Gln Glu Gln
130 135 140

<210> 6
<211> 144
<212> PRT
<213> Homo sapiens

<400> 6
Leu Arg Lys His Gln Glu Arg Val Gln Arg Leu Lys Glu Glu Cys Glu
1 5 10 15
Ala Gly Ser Arg Glu Leu Lys Arg Cys Lys Glu Glu Asn Tyr Asp Leu
20 25 30
Ala Met Arg Leu Ala His Gln Ser Glu Glu Lys Gly Ala Ala Leu Met
35 40 45
Arg Asn Arg Asp Leu Gln Leu Glu Ile Asp Gln Leu Lys His Ser Leu
50 55 60
Met Lys Ala Glu Asp Asp Cys Lys Val Glu Arg Lys His Thr Leu Lys
65 70 75 80
Leu Arg His Ala Met Glu Gln Arg Pro Ser Gln Glu Leu Leu Trp Glu
85 90 95
Leu Gln Gln Glu Lys Ala Leu Leu Gln Ala Arg Val Gln Glu Leu Glu
100 105 110
Ala Ser Val Gln Glu Gly Lys Leu Asp Arg Ser Ser Pro Tyr Ile Gln
115 120 125
Val Leu Glu Glu Asp Trp Arg Gln Ala Leu Arg Asp His Gln Glu Gln
130 135 140

<210> 7
<211> 3744
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)... (3744)

<400> 7
atg gat gac tac atg gag acg ctg aag gat gaa gag gac gcc ttg tgg 48
Met Asp Asp Tyr Met Glu Thr Leu Lys Asp Glu Glu Asp Ala Leu Trp
1 5 10 15

| | |
|---|-----|
| gag aat gtg gag tgt aac cgg cac atg ctc agc cgc tat atc aac cct | 96 |
| Glu Asn Val Glu Cys Asn Arg His Met Leu Ser Arg Tyr Ile Asn Pro | |
| 20 25 30 | |
| gcc aag ctc acg ccc tac ctg cgt cag tgt aag gtc att gat gag cag | 144 |
| Ala Lys Leu Thr Pro Tyr Leu Arg Gln Cys Lys Val Ile Asp Glu Gln | |
| 35 40 45 | |
| gat gaa gat gaa gtg ctt aat gcc cct atg ctg cca tcc aag atc aac | 192 |
| Asp Glu Asp Glu Val Leu Asn Ala Pro Met Leu Pro Ser Lys Ile Asn | |
| 50 55 60 | |
| cga gca ggc cgg ctg ttg gac att cta cat acc aag ggg caa agg ggc | 240 |
| Arg Ala Gly Arg Leu Leu Asp Ile Leu His Thr Lys Gly Gln Arg Gly | |
| 65 70 75 80 | |
| tat gtg gtc ttc ttg gag agc cta gaa ttt tat tac cca gaa ctg tac | 288 |
| Tyr Val Val Phe Leu Glu Ser Leu Glu Phe Tyr Tyr Pro Glu Leu Tyr | |
| 85 90 95 | |
| aaa ctg gtg act ggg aaa gag ccc act cgg aga ttc tcc acc att gtg | 336 |
| Lys Leu Val Thr Gly Lys Glu Pro Thr Arg Arg Phe Ser Thr Ile Val | |
| 100 105 110 | |
| gtg gag gaa ggc cac gag ggc ctc acg cac ttc ctg atg aac gag gtc | 384 |
| Val Glu Glu Gly His Glu Gly Leu Thr His Phe Leu Met Asn Glu Val | |
| 115 120 125 | |
| atc aag ctg cag cag cag atg aag gcc aag gac ctg caa cgc tgc gag | 432 |
| Ile Lys Leu Gln Gln Gln Met Lys Ala Lys Asp Leu Gln Arg Cys Glu | |
| 130 135 140 | |
| ctg ctg gcc agg ttg cgg cag ctg gag gat gag aag aag cag atg acg | 480 |
| Leu Leu Ala Arg Leu Arg Gln Leu Glu Asp Glu Lys Lys Gln Met Thr | |
| 145 150 155 160 | |
| ctg acg cgc gtg gag ctg cta acc ttc cag gag cgg tac tac aag atg | 528 |
| Leu Thr Arg Val Glu Leu Leu Thr Phe Gln Glu Arg Tyr Tyr Lys Met | |
| 165 170 175 | |
| aag gaa gag cgg gac agc tac aat gac gag ctg gtc aag gtg aag gac | 576 |
| Lys Glu Glu Arg Asp Ser Tyr Asn Asp Glu Leu Val Lys Val Lys Asp | |
| 180 185 190 | |
| gac aac tac aac tta gcc atg cgc tac gca cag ctc agt gag gag aag | 624 |
| Asp Asn Tyr Asn Leu Ala Met Arg Tyr Ala Gln Leu Ser Glu Glu Lys | |
| 195 200 205 | |
| aac atg gcg gtc atg agg agc cga gac ctc caa ctc gag atc gat cag | 672 |
| Asn Met Ala Val Met Arg Ser Arg Asp Leu Gln Leu Glu Ile Asp Gln | |
| 210 215 220 | |
| cta aag cac cgg ttg aat aag atg gag gag gaa tgt aag ctg gag aga | 720 |

| | |
|---|------|
| Leu Lys His Arg Leu Asn Lys Met Glu Glu Glu Cys Lys Leu Glu Arg | |
| 225 230 235 240 | |
| aat cag tct cta aaa ctg aag aat gac att gaa aat cgg ccc aag aag | 768 |
| Asn Gln Ser Leu Lys Leu Lys Asn Asp Ile Glu Asn Arg Pro Lys Lys | |
| 245 250 255 | |
| gag cag gtt ctg gaa ctg gag cgg gag aat gaa atg ctg aag acc aaa | 816 |
| Glu Gln Val Leu Glu Leu Glu Arg Glu Asn Glu Met Leu Lys Thr Lys | |
| 260 265 270 | |
| aac cag gag ctg cag tcc atc atc cag gcc ggg aag cgc agc ctg cca | 864 |
| Asn Gln Glu Leu Gln Ser Ile Ile Gln Ala Gly Lys Arg Ser Leu Pro | |
| 275 280 285 | |
| gac tca gac aag gcc atc ctg gac atc ttg gaa cac gac cgc aag gag | 912 |
| Asp Ser Asp Lys Ala Ile Leu Asp Ile Leu Glu His Asp Arg Lys Glu | |
| 290 295 300 | |
| gcc ctg gag gac agg cag gag ctg gtc aac agg atc tac aac ctg cag | 960 |
| Ala Leu Glu Asp Arg Gln Glu Leu Val Asn Arg Ile Tyr Asn Leu Gln | |
| 305 310 315 320 | |
| gag gag gcc cgc cag gca gag gag ctg cga gac aag tac ctg gag gag | 1008 |
| Glu Glu Ala Arg Gln Ala Glu Glu Leu Arg Asp Lys Tyr Leu Glu Glu | |
| 325 330 335 | |
| aag gag gac ctg gag ctc aag tgc tgc acc ctg gga aag gac tgt gaa | 1056 |
| Lys Glu Asp Leu Glu Leu Lys Cys Ser Thr Leu Gly Lys Asp Cys Glu | |
| 340 345 350 | |
| atg tac aag cac cgc atg aac acg gtc atg ctg cag ctg gag gag gtg | 1104 |
| Met Tyr Lys His Arg Met Asn Thr Val Met Leu Gln Leu Glu Glu Val | |
| 355 360 365 | |
| gag cgg gag cgg gac cag gga cag gct gtg gcc ttc cag gga cac tgc | 1152 |
| Glu Arg Glu Arg Asp Gln Gly Gln Ala Val Ala Phe Gln Gly His Cys | |
| 370 375 380 | |
| atc aaa gct ctc aac aca gag cct gcc act agc aag ggt cgg acc atc | 1200 |
| Ile Lys Ala Leu Asn Thr Glu Pro Ala Thr Ser Lys Gly Arg Thr Ile | |
| 385 390 395 400 | |
| ggc tct gtg atc gcg tta atg aag aag gcc ttc cac tcc cga gat gaa | 1248 |
| Gly Ser Val Ile Ala Leu Met Lys Lys Ala Phe His Ser Arg Asp Glu | |
| 405 410 415 | |
| gct cag aca cag tac tcg cag tgc tta atc gaa aag gac aag tac agg | 1296 |
| Ala Gln Thr Gln Tyr Ser Gln Cys Leu Ile Glu Lys Asp Lys Tyr Arg | |
| 420 425 430 | |
| aag cag atc cgc gag ctg gag gag aag aac gac gag atg agg atc gag | 1344 |
| Lys Gln Ile Arg Glu Leu Glu Glu Lys Asn Asp Glu Met Arg Ile Glu | |

| 435 | 440 | 445 | |
|---|-----|-----|------|
| atg gtg cgg cgg gag gcc tgc atc gtc aac ctg gag agc aag ctg cgg | | | 1392 |
| Met Val Arg Arg Glu Ala Cys Ile Val Asn Leu Glu Ser Lys Leu Arg | | | |
| 450 | 455 | 460 | |
| cgc ctc tcc aag gac agc aac aac ctg gac cag agt ctg ccc agg aac | | | 1440 |
| Arg Leu Ser Lys Asp Ser Asn Asn Leu Asp Gln Ser Leu Pro Arg Asn | | | |
| 465 | 470 | 475 | 480 |
| ctg cca gta acc atc atc tct cag gac ttt ggg gat gcc agc ccc agg | | | 1488 |
| Leu Pro Val Thr Ile Ile Ser Gln Asp Phe Gly Asp Ala Ser Pro Arg | | | |
| | 485 | 490 | 495 |
| acc aat ggt caa gaa gct gac gat tct tcc acc tcg gag gag tca cct | | | 1536 |
| Thr Asn Gly Gln Glu Ala Asp Asp Ser Ser Thr Ser Glu Glu Ser Pro | | | |
| | 500 | 505 | 510 |
| gaa gac agc aag tac ttc ctg ccc tac cat ccg ccc cag cgc agg atg | | | 1584 |
| Glu Asp Ser Lys Tyr Phe Leu Pro Tyr His Pro Pro Gln Arg Arg Met | | | |
| | 515 | 520 | 525 |
| aac ctg aag ggc atc cag ctg cag aga gcc aaa tcc ccc atc agc ctg | | | 1632 |
| Asn Leu Lys Gly Ile Gln Leu Gln Arg Ala Lys Ser Pro Ile Ser Leu | | | |
| | 530 | 535 | 540 |
| aag cga aca tca gat ttt caa gcc aag ggg cac gag gaa gaa ggc acg | | | 1680 |
| Lys Arg Thr Ser Asp Phe Gln Ala Lys Gly His Glu Glu Glu Gly Thr | | | |
| 545 | 550 | 555 | 560 |
| gac gcc agc cct agc tcc tgc gga tct ctg ccc atc acc aac tcc ttc | | | 1728 |
| Asp Ala Ser Pro Ser Ser Cys Gly Ser Leu Pro Ile Thr Asn Ser Phe | | | |
| | 565 | 570 | 575 |
| acc aag atg ccc ccc cgg agc cgc agc agc atc atg tca atc acc gcc | | | 1776 |
| Thr Lys Met Pro Pro Arg Ser Arg Ser Ser Ile Met Ser Ile Thr Ala | | | |
| | 580 | 585 | 590 |
| gag ccc ccg gga aac gac tcc atc gtc aga cgc tac aag gag gac gcg | | | 1824 |
| Glu Pro Pro Gly Asn Asp Ser Ile Val Arg Arg Tyr Lys Glu Asp Ala | | | |
| | 595 | 600 | 605 |
| ccc cat cgc agc aca gtc gaa gaa gac aat gac agc ggc ggg ttt gac | | | 1872 |
| Pro His Arg Ser Thr Val Glu Glu Asp Asn Asp Ser Gly Gly Phe Asp | | | |
| | 610 | 615 | 620 |
| gcc tta gat ctg gat gag ctg gca gca ggg gag act gtg gct cag agt | | | 1920 |
| Ala Leu Asp Leu Asp Glu Leu Ala Ala Gly Glu Thr Val Ala Gln Ser | | | |
| 625 | 630 | 635 | 640 |
| cct cca ggt gtg ccc tgc cag ccc cct ctc ttc cag ggc tcc ccc agc | | | 1968 |
| Pro Pro Gly Val Pro Cys Gln Pro Pro Leu Phe Gln Gly Ser Pro Ser | | | |
| | 645 | 650 | 655 |

| | |
|---|------|
| ctt tgc cag cta agg ctg cca acc gat gaa acg aaa gat gag tgg tcc | 2016 |
| Leu Cys Gln Leu Arg Leu Pro Thr Asp Glu Thr Lys Asp Glu Trp Ser | |
| 660 665 670 | |
| tcc tta atg ggg aag cat cag cgc tac caa gtg tta aag aga gat gac | 2064 |
| Ser Leu Met Gly Lys His Gln Arg Tyr Gln Val Leu Lys Arg Asp Asp | |
| 675 680 685 | |
| agt cac gaa cgc tac tcc ttc gga ccc tcc tcc atc cac tcc tcc tcc | 2112 |
| Ser His Glu Arg Tyr Ser Phe Gly Pro Ser Ser Ile His Ser Ser Ser | |
| 690 695 700 | |
| tcc tcc cac caa tcc gag ggc ctg gat gcc tac gac ctg gag cag gtc | 2160 |
| Ser Ser His Gln Ser Glu Gly Leu Asp Ala Tyr Asp Leu Glu Gln Val | |
| 705 710 715 720 | |
| aac ctc atg ttc agg aag ttc tct ctg gaa aga ccc ttc cgg cct tcg | 2208 |
| Asn Leu Met Phe Arg Lys Phe Ser Leu Glu Arg Pro Phe Arg Pro Ser | |
| 725 730 735 | |
| gtc acc tct gtg ggg cac gtg cgg ggc cca ggg ccc tcg gtg cag cac | 2256 |
| Val Thr Ser Val Gly His Val Arg Gly Pro Gly Pro Ser Val Gln His | |
| 740 745 750 | |
| acg acg ctg aat ggc gac agc ctc acc tcc cag ctc acc ctg ctg ggg | 2304 |
| Thr Thr Leu Asn Gly Asp Ser Leu Thr Ser Gln Leu Thr Leu Leu Gly | |
| 755 760 765 | |
| ggc aac gcg cga ggg agc ttc gtg cac tcg gtc aag cct ggc tct ctg | 2352 |
| Gly Asn Ala Arg Gly Ser Phe Val His Ser Val Lys Pro Gly Ser Leu | |
| 770 775 780 | |
| gcc gag aaa gcc ggc ctc cgt gag ggc cac cag ctg ctg ctg cta gaa | 2400 |
| Ala Glu Lys Ala Gly Leu Arg Glu Gly His Gln Leu Leu Leu Leu Glu | |
| 785 790 795 800 | |
| ggc tgc atc cga ggc gag agg cag agt gtc ccg ttg gac aca tgc acc | 2448 |
| Gly Cys Ile Arg Gly Glu Arg Gln Ser Val Pro Leu Asp Thr Cys Thr | |
| 805 810 815 | |
| aaa gag gaa gcc cac tgg acc atc cag agg tgc agc ggc ccc gtc acg | 2496 |
| Lys Glu Glu Ala His Trp Thr Ile Gln Arg Cys Ser Gly Pro Val Thr | |
| 820 825 830 | |
| ctg cac tac aag gtc aac cac gaa gcc cag cag aaa atc cgt ggg cct | 2544 |
| Leu His Tyr Lys Val Asn His Glu Ala Gln Gln Lys Ile Arg Gly Pro | |
| 835 840 845 | |
| gca gaa tat gat gtg ggc agc acc tcc aaa gcc cgg agc tgc gca gca | 2592 |
| Ala Glu Tyr Asp Val Gly Ser Thr Ser Lys Ala Arg Ser Cys Ala Ala | |
| 850 855 860 | |

| | |
|---|------|
| gca cag ccc tgc aag tct gga att cca ggg aaa gaa agt tca ttc cgg | 2640 |
| Ala Gln Pro Cys Lys Ser Gly Ile Pro Gly Lys Glu Ser Ser Phe Arg | |
| 865 870 875 880 | |
| cag ggg tac cgg aag ctg gtg aag gac atg gag gac ggc ctg atc aca | 2688 |
| Gln Gly Tyr Arg Lys Leu Val Lys Asp Met Glu Asp Gly Leu Ile Thr | |
| 885 890 895 | |
| tcg ggg gac tcg ttc tac atc cgg ctg aac ctg aac atc tcc agc cag | 2736 |
| Ser Gly Asp Ser Phe Tyr Ile Arg Leu Asn Leu Asn Ile Ser Ser Gln | |
| 900 905 910 | |
| ctg gac gcc tgc acc atg tcc ctg aag tgt gac gat gtt gtg cac gtc | 2784 |
| Leu Asp Ala Cys Thr Met Ser Leu Lys Cys Asp Asp Val Val His Val | |
| 915 920 925 | |
| cgt gac acc atg tac cag gac agg cac gag tgg ctg tgc gcg cgg gtc | 2832 |
| Arg Asp Thr Met Tyr Gln Asp Arg His Glu Trp Leu Cys Ala Arg Val | |
| 930 935 940 | |
| gac cct ttc aca gac cat gac ctg gat atg ggc acc ata ccc agc tac | 2880 |
| Asp Pro Phe Thr Asp His Asp Leu Asp Met Gly Thr Ile Pro Ser Tyr | |
| 945 950 955 960 | |
| agc cga gcc cag cag ctc ctc ctg gtg aaa ctg cag cgc ctg atg cac | 2928 |
| Ser Arg Ala Gln Gln Leu Leu Leu Val Lys Leu Gln Arg Leu Met His | |
| 965 970 975 | |
| cga ggc agc cgg gag gag gta gac ggc acc cac cac acc ctg cgg gca | 2976 |
| Arg Gly Ser Arg Glu Glu Val Asp Gly Thr His His Thr Leu Arg Ala | |
| 980 985 990 | |
| ctc cgg ttc gtc agc agg tcc gag aac aag tat aag cgg atg aac agc | 3024 |
| Leu Arg Phe Val Ser Arg Ser Glu Asn Lys Tyr Lys Arg Met Asn Ser | |
| 995 1000 1005 | |
| aat gag cgg gtc cgc atc atc tcg ggg agt ccg cta ggg agc ctg gcc | 3072 |
| Asn Glu Arg Val Arg Ile Ile Ser Gly Ser Pro Leu Gly Ser Leu Ala | |
| 1010 1015 1020 | |
| cgg tcc tcg ctg gac gcc acc aag ctc ttg act gag aag cag gaa gag | 3120 |
| Arg Ser Ser Leu Asp Ala Thr Lys Leu Leu Thr Glu Lys Gln Glu Glu | |
| 1025 1030 1035 1040 | |
| ctg gac cct gag agc gag ctg ggc aag aac ctc agc ctc atc ccc tac | 3168 |
| Leu Asp Pro Glu Ser Glu Leu Gly Lys Asn Leu Ser Leu Ile Pro Tyr | |
| 1045 1050 1055 | |
| agc ctg gta cgc gcc ttc tac tgc gag cgc cgc cgg ccc gtg ctc ttc | 3216 |
| Ser Leu Val Arg Ala Phe Tyr Cys Glu Arg Arg Arg Pro Val Leu Phe | |
| 1060 1065 1070 | |
| aca ccc acc gtg ctg gcc aag acg ctg gtg cag agg ctg ctc aac tcg | 3264 |

| | | | | | | | | | | | | | | | | | |
|------|------|-----|-----|------|-----|------|------|------|-----|------|-----|------|------|------|-----|------|--|
| Thr | Pro | Thr | Val | Leu | Ala | Lys | Thr | Leu | Val | Gln | Arg | Leu | Leu | Asn | Ser | | |
| | 1075 | | | | | | 1080 | | | | | 1085 | | | | | |
| gga | ggt | gcc | atg | gag | ttc | acc | atc | tgc | aag | tca | gat | atc | gtc | aca | aga | 3312 | |
| Gly | Gly | Ala | Met | Glu | Phe | Thr | Ile | Cys | Lys | Ser | Asp | Ile | Val | Thr | Arg | | |
| | 1090 | | | | | 1095 | | | | 1100 | | | | | | | |
| gat | gag | ttc | ctc | aga | agg | cag | aag | acg | gag | acc | atc | atc | tac | tcc | cga | 3360 | |
| Asp | Glu | Phe | Leu | Arg | Arg | Gln | Lys | Thr | Glu | Thr | Ile | Ile | Tyr | Ser | Arg | | |
| 1105 | | | | 1110 | | | | 1115 | | | | | 1120 | | | | |
| gag | aag | aac | ccc | aac | gcg | ttc | gaa | tgc | atc | gcc | cct | gcc | aac | att | gaa | 3408 | |
| Glu | Lys | Asn | Pro | Asn | Ala | Phe | Glu | Cys | Ile | Ala | Pro | Ala | Asn | Ile | Glu | | |
| | | | | 1125 | | | | 1130 | | | | | 1135 | | | | |
| gct | gtg | gcc | gcc | aag | aac | aag | cac | tgc | ctg | ctg | gag | gct | ggg | atc | ggc | 3456 | |
| Ala | Val | Ala | Ala | Lys | Asn | Lys | His | Cys | Leu | Leu | Glu | Ala | Gly | Ile | Gly | | |
| | | | | 1140 | | | | 1145 | | | | | 1150 | | | | |
| tgc | aca | aga | gac | ttg | atc | aag | tcc | aac | atc | tac | ccc | atc | gtg | ctc | ttc | 3504 | |
| Cys | Thr | Arg | Asp | Leu | Ile | Lys | Ser | Asn | Ile | Tyr | Pro | Ile | Val | Leu | Phe | | |
| | 1155 | | | | | 1160 | | | | | | 1165 | | | | | |
| atc | cgg | gtg | tgt | gag | aag | aac | atc | aag | agg | ttc | aga | aag | ctg | ctg | ccc | 3552 | |
| Ile | Arg | Val | Cys | Glu | Lys | Asn | Ile | Lys | Arg | Phe | Arg | Lys | Leu | Leu | Pro | | |
| | 1170 | | | | | 1175 | | | | 1180 | | | | | | | |
| cgg | cct | gag | acg | gag | gag | gag | ttc | ctg | cgc | gtg | tgc | cgg | ctg | aag | gag | 3600 | |
| Arg | Pro | Glu | Thr | Glu | Glu | Glu | Phe | Leu | Arg | Val | Cys | Arg | Leu | Lys | Glu | | |
| 1185 | | | | | | 1190 | | | | 1195 | | | | 1200 | | | |
| aag | gag | ctg | gag | gcc | ctg | ccg | tgc | ctg | tac | gcc | acg | gtg | gaa | cct | gac | 3648 | |
| Lys | Glu | Leu | Glu | Ala | Leu | Pro | Cys | Leu | Tyr | Ala | Thr | Val | Glu | Pro | Asp | | |
| | | | | 1205 | | | | 1210 | | | | | 1215 | | | | |
| atg | tgg | ggc | agc | gta | gag | gag | ctg | ctc | cgc | gtt | gtc | aag | gac | aag | atc | 3696 | |
| Met | Trp | Gly | Ser | Val | Glu | Glu | Leu | Leu | Arg | Val | Val | Lys | Asp | Lys | Ile | | |
| | | | | 1220 | | | | 1225 | | | | | 1230 | | | | |
| ggc | gag | gag | cag | cgc | aag | acc | atc | tgg | gtg | gac | gag | gac | cag | ctg | tga | 3744 | |
| Gly | Glu | Glu | Gln | Arg | Lys | Thr | Ile | Trp | Val | Asp | Glu | Asp | Gln | Leu | * | | |
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<210> 8

<211> 1247

<212> PRT

<213> Homo sapiens

<400> 8

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Asp | Asp | Tyr | Met | Glu | Thr | Leu | Lys | Asp | Glu | Glu | Asp | Ala | Leu | Trp |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Asn | Val | Glu | Cys | Asn | Arg | His | Met | Leu | Ser | Arg | Tyr | Ile | Asn | Pro | 20 | 25 | 30 |
| Ala | Lys | Leu | Thr | Pro | Tyr | Leu | Arg | Gln | Cys | Lys | Val | Ile | Asp | Glu | Gln | 35 | 40 | 45 |
| Asp | Glu | Asp | Glu | Val | Leu | Asn | Ala | Pro | Met | Leu | Pro | Ser | Lys | Ile | Asn | 50 | 55 | 60 |
| Arg | Ala | Gly | Arg | Leu | Leu | Asp | Ile | Leu | His | Thr | Lys | Gly | Gln | Arg | Gly | 65 | 70 | 75 |
| Tyr | Val | Val | Phe | Leu | Glu | Ser | Leu | Glu | Phe | Tyr | Tyr | Pro | Glu | Leu | Tyr | 85 | 90 | 95 |
| Lys | Leu | Val | Thr | Gly | Lys | Glu | Pro | Thr | Arg | Arg | Phe | Ser | Thr | Ile | Val | 100 | 105 | 110 |
| Val | Glu | Glu | Gly | His | Glu | Gly | Leu | Thr | His | Phe | Leu | Met | Asn | Glu | Val | 115 | 120 | 125 |
| Ile | Lys | Leu | Gln | Gln | Gln | Met | Lys | Ala | Lys | Asp | Leu | Gln | Arg | Cys | Glu | 130 | 135 | 140 |
| Leu | Leu | Ala | Arg | Leu | Arg | Gln | Leu | Glu | Asp | Glu | Lys | Lys | Gln | Met | Thr | 145 | 150 | 155 |
| Leu | Thr | Arg | Val | Glu | Leu | Leu | Thr | Phe | Gln | Glu | Arg | Tyr | Tyr | Lys | Met | 165 | 170 | 175 |
| Lys | Glu | Glu | Arg | Asp | Ser | Tyr | Asn | Asp | Glu | Leu | Val | Lys | Val | Lys | Asp | 180 | 185 | 190 |
| Asp | Asn | Tyr | Asn | Leu | Ala | Met | Arg | Tyr | Ala | Gln | Leu | Ser | Glu | Glu | Lys | 195 | 200 | 205 |
| Asn | Met | Ala | Val | Met | Arg | Ser | Arg | Asp | Leu | Gln | Leu | Glu | Ile | Asp | Gln | 210 | 215 | 220 |
| Leu | Lys | His | Arg | Leu | Asn | Lys | Met | Glu | Glu | Glu | Cys | Lys | Leu | Glu | Arg | 225 | 230 | 235 |
| Asn | Gln | Ser | Leu | Lys | Leu | Lys | Asn | Asp | Ile | Glu | Asn | Arg | Pro | Lys | Lys | 245 | 250 | 255 |
| Glu | Gln | Val | Leu | Glu | Leu | Glu | Arg | Glu | Asn | Glu | Met | Leu | Lys | Thr | Lys | 260 | 265 | 270 |
| Asn | Gln | Glu | Leu | Gln | Ser | Ile | Ile | Gln | Ala | Gly | Lys | Arg | Ser | Leu | Pro | 275 | 280 | 285 |
| Asp | Ser | Asp | Lys | Ala | Ile | Leu | Asp | Ile | Leu | Glu | His | Asp | Arg | Lys | Glu | 290 | 295 | 300 |
| Ala | Leu | Glu | Asp | Arg | Gln | Glu | Leu | Val | Asn | Arg | Ile | Tyr | Asn | Leu | Gln | 305 | 310 | 315 |
| Glu | Glu | Ala | Arg | Gln | Ala | Glu | Glu | Leu | Arg | Asp | Lys | Tyr | Leu | Glu | Glu | 325 | 330 | 335 |
| Lys | Glu | Asp | Leu | Glu | Leu | Lys | Cys | Ser | Thr | Leu | Gly | Lys | Asp | Cys | Glu | 340 | 345 | 350 |
| Met | Tyr | Lys | His | Arg | Met | Asn | Thr | Val | Met | Leu | Gln | Leu | Glu | Glu | Val | 355 | 360 | 365 |
| Glu | Arg | Glu | Arg | Asp | Gln | Gly | Gln | Ala | Val | Ala | Phe | Gln | Gly | His | Cys | 370 | 375 | 380 |
| Ile | Lys | Ala | Leu | Asn | Thr | Glu | Pro | Ala | Thr | Ser | Lys | Gly | Arg | Thr | Ile | 385 | 390 | 395 |
| Gly | Ser | Val | Ile | Ala | Leu | Met | Lys | Lys | Ala | Phe | His | Ser | Arg | Asp | Glu | 405 | 410 | 415 |
| Ala | Gln | Thr | Gln | Tyr | Ser | Gln | Cys | Leu | Ile | Glu | Lys | Asp | Lys | Tyr | Arg | 420 | 425 | 430 |
| Lys | Gln | Ile | Arg | Glu | Leu | Glu | Glu | Lys | Asn | Asp | Glu | Met | Arg | Ile | Glu | | | |

| | | | | |
|---|-----|-----|-----|-----|
| 435 | | 440 | | 445 |
| Met Val Arg Arg Glu Ala Cys Ile Val Asn Leu Glu Ser Lys Leu Arg | | | | |
| 450 | | 455 | | 460 |
| Arg Leu Ser Lys Asp Ser Asn Asn Leu Asp Gln Ser Leu Pro Arg Asn | | | | |
| 465 | | 470 | | 480 |
| Leu Pro Val Thr Ile Ile Ser Gln Asp Phe Gly Asp Ala Ser Pro Arg | | | | |
| | 485 | | 490 | 495 |
| Thr Asn Gly Gln Glu Ala Asp Asp Ser Ser Thr Ser Glu Glu Ser Pro | | | | |
| | 500 | | 505 | 510 |
| Glu Asp Ser Lys Tyr Phe Leu Pro Tyr His Pro Pro Gln Arg Arg Met | | | | |
| | 515 | | 520 | 525 |
| Asn Leu Lys Gly Ile Gln Leu Gln Arg Ala Lys Ser Pro Ile Ser Leu | | | | |
| | 530 | | 535 | 540 |
| Lys Arg Thr Ser Asp Phe Gln Ala Lys Gly His Glu Glu Glu Gly Thr | | | | |
| 545 | | 550 | | 560 |
| Asp Ala Ser Pro Ser Ser Cys Gly Ser Leu Pro Ile Thr Asn Ser Phe | | | | |
| | 565 | | 570 | 575 |
| Thr Lys Met Pro Pro Arg Ser Arg Ser Ser Ile Met Ser Ile Thr Ala | | | | |
| | 580 | | 585 | 590 |
| Glu Pro Pro Gly Asn Asp Ser Ile Val Arg Arg Tyr Lys Glu Asp Ala | | | | |
| | 595 | | 600 | 605 |
| Pro His Arg Ser Thr Val Glu Glu Asp Asn Asp Ser Gly Gly Phe Asp | | | | |
| | 610 | | 615 | 620 |
| Ala Leu Asp Leu Asp Glu Leu Ala Ala Gly Glu Thr Val Ala Gln Ser | | | | |
| 625 | | 630 | | 640 |
| Pro Pro Gly Val Pro Cys Gln Pro Pro Leu Phe Gln Gly Ser Pro Ser | | | | |
| | 645 | | 650 | 655 |
| Leu Cys Gln Leu Arg Leu Pro Thr Asp Glu Thr Lys Asp Glu Trp Ser | | | | |
| | 660 | | 665 | 670 |
| Ser Leu Met Gly Lys His Gln Arg Tyr Gln Val Leu Lys Arg Asp Asp | | | | |
| | 675 | | 680 | 685 |
| Ser His Glu Arg Tyr Ser Phe Gly Pro Ser Ser Ile His Ser Ser Ser | | | | |
| | 690 | | 695 | 700 |
| Ser Ser His Gln Ser Glu Gly Leu Asp Ala Tyr Asp Leu Glu Gln Val | | | | |
| 705 | | 710 | | 720 |
| Asn Leu Met Phe Arg Lys Phe Ser Leu Glu Arg Pro Phe Arg Pro Ser | | | | |
| | 725 | | 730 | 735 |
| Val Thr Ser Val Gly His Val Arg Gly Pro Gly Pro Ser Val Gln His | | | | |
| | 740 | | 745 | 750 |
| Thr Thr Leu Asn Gly Asp Ser Leu Thr Ser Gln Leu Thr Leu Leu Gly | | | | |
| | 755 | | 760 | 765 |
| Gly Asn Ala Arg Gly Ser Phe Val His Ser Val Lys Pro Gly Ser Leu | | | | |
| | 770 | | 775 | 780 |
| Ala Glu Lys Ala Gly Leu Arg Glu Gly His Gln Leu Leu Leu Leu Glu | | | | |
| 785 | | 790 | | 800 |
| Gly Cys Ile Arg Gly Glu Arg Gln Ser Val Pro Leu Asp Thr Cys Thr | | | | |
| | 805 | | 810 | 815 |
| Lys Glu Glu Ala His Trp Thr Ile Gln Arg Cys Ser Gly Pro Val Thr | | | | |
| | 820 | | 825 | 830 |
| Leu His Tyr Lys Val Asn His Glu Ala Gln Gln Lys Ile Arg Gly Pro | | | | |
| | 835 | | 840 | 845 |
| Ala Glu Tyr Asp Val Gly Ser Thr Ser Lys Ala Arg Ser Cys Ala Ala | | | | |
| 850 | | 855 | | 860 |

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| Ala | Gln | Pro | Cys | Lys | Ser | Gly | Ile | Pro | Gly | Lys | Glu | Ser | Ser | Phe | Arg | 865 | 870 | 875 | 880 |
| Gln | Gly | Tyr | Arg | Lys | Leu | Val | Lys | Asp | Met | Glu | Asp | Gly | Leu | Ile | Thr | 885 | 890 | 895 | |
| Ser | Gly | Asp | Ser | Phe | Tyr | Ile | Arg | Leu | Asn | Leu | Asn | Ile | Ser | Ser | Gln | 900 | 905 | 910 | |
| Leu | Asp | Ala | Cys | Thr | Met | Ser | Leu | Lys | Cys | Asp | Asp | Val | Val | His | Val | 915 | 920 | 925 | |
| Arg | Asp | Thr | Met | Tyr | Gln | Asp | Arg | His | Glu | Trp | Leu | Cys | Ala | Arg | Val | 930 | 935 | 940 | |
| Asp | Pro | Phe | Thr | Asp | His | Asp | Leu | Asp | Met | Gly | Thr | Ile | Pro | Ser | Tyr | 945 | 950 | 955 | 960 |
| Ser | Arg | Ala | Gln | Gln | Leu | Leu | Leu | Val | Lys | Leu | Gln | Arg | Leu | Met | His | 965 | 970 | 975 | |
| Arg | Gly | Ser | Arg | Glu | Glu | Val | Asp | Gly | Thr | His | His | Thr | Leu | Arg | Ala | 980 | 985 | 990 | |
| Leu | Arg | Phe | Val | Ser | Arg | Ser | Glu | Asn | Lys | Tyr | Lys | Arg | Met | Asn | Ser | 995 | 1000 | 1005 | |
| Asn | Glu | Arg | Val | Arg | Ile | Ile | Ser | Gly | Ser | Pro | Leu | Gly | Ser | Leu | Ala | 1010 | 1015 | 1020 | |
| Arg | Ser | Ser | Leu | Asp | Ala | Thr | Lys | Leu | Leu | Thr | Glu | Lys | Gln | Glu | Glu | 1025 | 1030 | 1035 | 1040 |
| Leu | Asp | Pro | Glu | Ser | Glu | Leu | Gly | Lys | Asn | Leu | Ser | Leu | Ile | Pro | Tyr | 1045 | 1050 | 1055 | |
| Ser | Leu | Val | Arg | Ala | Phe | Tyr | Cys | Glu | Arg | Arg | Arg | Pro | Val | Leu | Phe | 1060 | 1065 | 1070 | |
| Thr | Pro | Thr | Val | Leu | Ala | Lys | Thr | Leu | Val | Gln | Arg | Leu | Leu | Asn | Ser | 1075 | 1080 | 1085 | |
| Gly | Gly | Ala | Met | Glu | Phe | Thr | Ile | Cys | Lys | Ser | Asp | Ile | Val | Thr | Arg | 1090 | 1095 | 1100 | |
| Asp | Glu | Phe | Leu | Arg | Arg | Gln | Lys | Thr | Glu | Thr | Ile | Ile | Tyr | Ser | Arg | 1105 | 1110 | 1115 | 1120 |
| Glu | Lys | Asn | Pro | Asn | Ala | Phe | Glu | Cys | Ile | Ala | Pro | Ala | Asn | Ile | Glu | 1125 | 1130 | 1135 | |
| Ala | Val | Ala | Ala | Lys | Asn | Lys | His | Cys | Leu | Leu | Glu | Ala | Gly | Ile | Gly | 1140 | 1145 | 1150 | |
| Cys | Thr | Arg | Asp | Leu | Ile | Lys | Ser | Asn | Ile | Tyr | Pro | Ile | Val | Leu | Phe | 1155 | 1160 | 1165 | |
| Ile | Arg | Val | Cys | Glu | Lys | Asn | Ile | Lys | Arg | Phe | Arg | Lys | Leu | Leu | Pro | 1170 | 1175 | 1180 | |
| Arg | Pro | Glu | Thr | Glu | Glu | Phe | Leu | Arg | Val | Cys | Arg | Leu | Lys | Glu | | 1185 | 1190 | 1195 | 1200 |
| Lys | Glu | Leu | Glu | Ala | Leu | Pro | Cys | Leu | Tyr | Ala | Thr | Val | Glu | Pro | Asp | 1205 | 1210 | 1215 | |
| Met | Trp | Gly | Ser | Val | Glu | Glu | Leu | Leu | Arg | Val | Val | Lys | Asp | Lys | Ile | 1220 | 1225 | 1230 | |
| Gly | Glu | Glu | Gln | Arg | Lys | Thr | Ile | Trp | Val | Asp | Glu | Asp | Gln | Leu | | 1235 | 1240 | 1245 | |

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<211> 276

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(276)

<400> 9

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| Glu Asp Ala Leu Trp Glu Asn Val Glu Cys Asn Arg His Met Leu Ser | |
| 1 5 10 15 | |
| cgc tat atc aac cct gcc aag ctc acg ccc tac ctg cgt cag tgt aag | 96 |
| Arg Tyr Ile Asn Pro Ala Lys Leu Thr Pro Tyr Leu Arg Gln Cys Lys | |
| 20 25 30 | |
| gtc att gat gag cag gat gaa gat gaa gtg ctt aat gcc cct atg ctg | 144 |
| Val Ile Asp Glu Gln Asp Glu Asp Glu Val Leu Asn Ala Pro Met Leu | |
| 35 40 45 | |
| cca tcc aag atc aac cga gca ggc cgg ctg ttg gac att cta cat acc | 192 |
| Pro Ser Lys Ile Asn Arg Ala Gly Arg Leu Leu Asp Ile Leu His Thr | |
| 50 55 60 | |
| aag ggg caa agg ggc tat gtg gtc ttc ttg gag agc cta gaa ttt tat | 240 |
| Lys Gly Gln Arg Gly Tyr Val Val Phe Leu Glu Ser Leu Glu Phe Tyr | |
| 65 70 75 80 | |
| tac cca gaa ctg tac aaa ctg gtg act ggg aaa gag | 276 |
| Tyr Pro Glu Leu Tyr Lys Leu Val Thr Gly Lys Glu | |
| 85 90 | |

<210> 10

<211> 92

<212> PRT

<213> Homo sapiens

<400> 10

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| Glu Asp Ala Leu Trp Glu Asn Val Glu Cys Asn Arg His Met Leu Ser | |
| 1 5 10 15 | |
| Arg Tyr Ile Asn Pro Ala Lys Leu Thr Pro Tyr Leu Arg Gln Cys Lys | |
| 20 25 30 | |
| Val Ile Asp Glu Gln Asp Glu Asp Glu Val Leu Asn Ala Pro Met Leu | |
| 35 40 45 | |
| Pro Ser Lys Ile Asn Arg Ala Gly Arg Leu Leu Asp Ile Leu His Thr | |
| 50 55 60 | |
| Lys Gly Gln Arg Gly Tyr Val Val Phe Leu Glu Ser Leu Glu Phe Tyr | |
| 65 70 75 80 | |
| Tyr Pro Glu Leu Tyr Lys Leu Val Thr Gly Lys Glu | |
| 85 90 | |

<210> 11

<211> 957
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<220>
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<400> 11

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| Lys Leu Gln Gln Gln Met Lys Ala Lys Asp Leu Gln Arg Cys Glu Leu | |
| 1 5 10 15 | |
| ctg gcc agg ttg cgg cag ctg gag gat gag aag aag cag atg acg ctg | 96 |
| Leu Ala Arg Leu Arg Gln Leu Glu Asp Glu Lys Lys Gln Met Thr Leu | |
| 20 25 30 | |
| acg cgc gtg gag ctg cta acc ttc cag gag cgg tac tac aag atg aag | 144 |
| Thr Arg Val Glu Leu Leu Thr Phe Gln Glu Arg Tyr Tyr Lys Met Lys | |
| 35 40 45 | |
| gaa gag cgg gac agc tac aat gac gag ctg gtc aag gtg aag gac gac | 192 |
| Glu Glu Arg Asp Ser Tyr Asn Asp Glu Leu Val Lys Val Lys Asp Asp | |
| 50 55 60 | |
| aac tac aac tta gcc atg cgc tac gca cag ctg agt gag gag aag aac | 240 |
| Asn Tyr Asn Leu Ala Met Arg Tyr Ala Gln Leu Ser Glu Glu Lys Asn | |
| 65 70 75 80 | |
| atg gcg gtc atg agg agc cga gac ctg caa ctg gag atc gat cag cta | 288 |
| Met Ala Val Met Arg Ser Arg Asp Leu Gln Leu Glu Ile Asp Gln Leu | |
| 85 90 95 | |
| aag cac cgg ttg aat aag atg gag gag gaa tgt aag ctg gag aga aat | 336 |
| Lys His Arg Leu Asn Lys Met Glu Glu Glu Cys Lys Leu Glu Arg Asn | |
| 100 105 110 | |
| cag tct cta aaa ctg aag aat gac att gaa aat cgg ccc aag aag gag | 384 |
| Gln Ser Leu Lys Leu Lys Asn Asp Ile Glu Asn Arg Pro Lys Lys Glu | |
| 115 120 125 | |
| cag gtt ctg gaa ctg gag cgg gag aat gaa atg ctg aag acc aaa aac | 432 |
| Gln Val Leu Glu Leu Glu Arg Glu Asn Glu Met Leu Lys Thr Lys Asn | |
| 130 135 140 | |
| cag gag ctg cag tcc atc atc cag gcc ggg aag cgc agc ctg cca gac | 480 |
| Gln Glu Leu Gln Ser Ile Ile Gln Ala Gly Lys Arg Ser Leu Pro Asp | |
| 145 150 155 160 | |
| tca gac aag gcc atc ctg gac atc ttg gaa cac gac cgc aag gag gcc | 528 |
| Ser Asp Lys Ala Ile Leu Asp Ile Leu Glu His Asp Arg Lys Glu Ala | |
| 165 170 175 | |

| | |
|---|-----|
| ctg gag gac agg cag gag ctg gtc aac agg atc tac aac ctg cag gag | 576 |
| Leu Glu Asp Arg Gln Glu Leu Val Asn Arg Ile Tyr Asn Leu Gln Glu | |
| 180 185 190 | |
| | |
| gag gcc cgc cag gca gag gag ctg cga gac aag tac ctg gag gag aag | 624 |
| Glu Ala Arg Gln Ala Glu Glu Leu Arg Asp Lys Tyr Leu Glu Glu Lys | |
| 195 200 205 | |
| | |
| gag gac ctg gag ctc aag tgc tcg acc ctg gga aag gac tgt gaa atg | 672 |
| Glu Asp Leu Glu Leu Lys Cys Ser Thr Leu Gly Lys Asp Cys Glu Met | |
| 210 215 220 | |
| | |
| tac aag cac cgc atg aac acg gtc atg ctg cag ctg gag gag gtg gag | 720 |
| Tyr Lys His Arg Met Asn Thr Val Met Leu Gln Leu Glu Glu Val Glu | |
| 225 230 235 240 | |
| | |
| cgg gag cgg gac cag gga cag gct gtg gcc ttc cag gga cac tgc atc | 768 |
| Arg Glu Arg Asp Gln Gly Gln Ala Val Ala Phe Gln Gly His Cys Ile | |
| 245 250 255 | |
| | |
| aaa gct ctc aac aca gag cct gcc act agc aag ggt cgg acc atc ggc | 816 |
| Lys Ala Leu Asn Thr Glu Pro Ala Thr Ser Lys Gly Arg Thr Ile Gly | |
| 260 265 270 | |
| | |
| tct gtg atc gcg tta atg aag aag gcc ttc cac tcc cga gat gaa gct | 864 |
| Ser Val Ile Ala Leu Met Lys Lys Ala Phe His Ser Arg Asp Glu Ala | |
| 275 280 285 | |
| | |
| cag aca cag tac tcg cag tgc tta atc gaa aag gac aag tac agg aag | 912 |
| Gln Thr Gln Tyr Ser Gln Cys Leu Ile Glu Lys Asp Lys Tyr Arg Lys | |
| 290 295 300 | |
| | |
| cag atc cgc gag ctg gag gag aag aac gac gag atg agg atc gag | 957 |
| Gln Ile Arg Glu Leu Glu Glu Lys Asn Asp Glu Met Arg Ile Glu | |
| 305 310 315 | |

<210> 12

<211> 319

<212> PRT

<213> Homo sapiens

<400> 12

| | |
|---|--|
| Lys Leu Gln Gln Gln Met Lys Ala Lys Asp Leu Gln Arg Cys Glu Leu | |
| 1 5 10 15 | |
| Leu Ala Arg Leu Arg Gln Leu Glu Asp Glu Lys Lys Gln Met Thr Leu | |
| 20 25 30 | |
| Thr Arg Val Glu Leu Leu Thr Phe Gln Glu Arg Tyr Tyr Lys Met Lys | |
| 35 40 45 | |
| Glu Glu Arg Asp Ser Tyr Asn Asp Glu Leu Val Lys Val Lys Asp Asp | |
| 50 55 60 | |
| Asn Tyr Asn Leu Ala Met Arg Tyr Ala Gln Leu Ser Glu Glu Lys Asn | |

| 65 | | | | 70 | | | | 75 | | | | 80 | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Val | Met | Arg | Ser | Arg | Asp | Leu | Gln | Leu | Glu | Ile | Asp | Gln | Leu |
| 85 | | | | 90 | | | | 95 | | | | | | | |
| Lys | His | Arg | Leu | Asn | Lys | Met | Glu | Glu | Glu | Cys | Lys | Leu | Glu | Arg | Asn |
| 100 | | | | 105 | | | | 110 | | | | | | | |
| Gln | Ser | Leu | Lys | Leu | Lys | Asn | Asp | Ile | Glu | Asn | Arg | Pro | Lys | Lys | Glu |
| 115 | | | | 120 | | | | 125 | | | | | | | |
| Gln | Val | Leu | Glu | Leu | Glu | Arg | Glu | Asn | Glu | Met | Leu | Lys | Thr | Lys | Asn |
| 130 | | | | 135 | | | | 140 | | | | | | | |
| Gln | Glu | Leu | Gln | Ser | Ile | Ile | Gln | Ala | Gly | Lys | Arg | Ser | Leu | Pro | Asp |
| 145 | | | | 150 | | | | 155 | | | | 160 | | | |
| Ser | Asp | Lys | Ala | Ile | Leu | Asp | Ile | Leu | Glu | His | Asp | Arg | Lys | Glu | Ala |
| 165 | | | | 170 | | | | 175 | | | | | | | |
| Leu | Glu | Asp | Arg | Gln | Glu | Leu | Val | Asn | Arg | Ile | Tyr | Asn | Leu | Gln | Glu |
| 180 | | | | 185 | | | | 190 | | | | | | | |
| Glu | Ala | Arg | Gln | Ala | Glu | Glu | Leu | Arg | Asp | Lys | Tyr | Leu | Glu | Glu | Lys |
| 195 | | | | 200 | | | | 205 | | | | | | | |
| Glu | Asp | Leu | Glu | Leu | Lys | Cys | Ser | Thr | Leu | Gly | Lys | Asp | Cys | Glu | Met |
| 210 | | | | 215 | | | | 220 | | | | | | | |
| Tyr | Lys | His | Arg | Met | Asn | Thr | Val | Met | Leu | Gln | Leu | Glu | Glu | Val | Glu |
| 225 | | | | 230 | | | | 235 | | | | 240 | | | |
| Arg | Glu | Arg | Asp | Gln | Gly | Gln | Ala | Val | Ala | Phe | Gln | Gly | His | Cys | Ile |
| 245 | | | | 250 | | | | 255 | | | | | | | |
| Lys | Ala | Leu | Asn | Thr | Glu | Pro | Ala | Thr | Ser | Lys | Gly | Arg | Thr | Ile | Gly |
| 260 | | | | 265 | | | | 270 | | | | | | | |
| Ser | Val | Ile | Ala | Leu | Met | Lys | Lys | Ala | Phe | His | Ser | Arg | Asp | Glu | Ala |
| 275 | | | | 280 | | | | 285 | | | | | | | |
| Gln | Thr | Gln | Tyr | Ser | Gln | Cys | Leu | Ile | Glu | Lys | Asp | Lys | Tyr | Arg | Lys |
| 290 | | | | 295 | | | | 300 | | | | | | | |
| Gln | Ile | Arg | Glu | Leu | Glu | Glu | Lys | Asn | Asp | Glu | Met | Arg | Ile | Glu | |
| 305 | | | | 310 | | | | 315 | | | | | | | |

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<210> 13
<211> 339
<212> DNA
<213> Homo sapiens
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<220>
<221> CDS
<222> (1) ... (339)
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<400> 13
aag ttc tct ctg gaa aga ccc ttc cgg cct tcg gtc acc tct gtg ggg      48
Lys Phe Ser Leu Glu Arg Pro Phe Arg Pro Ser Val Thr Ser Val Gly
  1                      5                      10                      15

cac gtg cgg ggc cca ggg ccc tcg gtg cag cac acg acg ctg aat ggc      96
His Val Arg Gly Pro Gly Pro Ser Val Gln His Thr Thr Leu Asn Gly
          20                      25                      30

gac agc ctc acc tcc cag ctc acc ctg ctg ggg ggc aac gcg cga ggg     144
Asp Ser Leu Thr Ser Gln Leu Thr Leu Leu Gly Gly Asn Ala Arg Gly

```

| 35 | 40 | 45 | |
|---|-----|-----|-----|
| agc ttc gtg cac tcg gtc aag cct ggc tct ctg gcc gag aaa gcc ggc | | | 192 |
| Ser Phe Val His Ser Val Lys Pro Gly Ser Leu Ala Glu Lys Ala Gly | | | |
| 50 | 55 | 60 | |
| ctc cgt gag ggc cac cag ctg ctg ctg cta gaa ggc tgc atc cga ggc | | | 240 |
| Leu Arg Glu Gly His Gln Leu Leu Leu Leu Glu Gly Cys Ile Arg Gly | | | |
| 65 | 70 | 75 | 80 |
| gag agg cag agt gtc ccg ttg gac aca tgc acc aaa gag gaa gcc cac | | | 288 |
| Glu Arg Gln Ser Val Pro Leu Asp Thr Cys Thr Lys Glu Glu Ala His | | | |
| 85 | 90 | 95 | |
| tgg acc atc cag agg tgc agc ggc ccc gtc acg ctg cac tac aag gtc | | | 336 |
| Trp Thr Ile Gln Arg Cys Ser Gly Pro Val Thr Leu His Tyr Lys Val | | | |
| 100 | 105 | 110 | |
| aac | | | 339 |
| Asn | | | |

<210> 14
 <211> 113
 <212> PRT
 <213> Homo sapiens

<400> 14

| | | | |
|---|-----|-----|----|
| Lys Phe Ser Leu Glu Arg Pro Phe Arg Pro Ser Val Thr Ser Val Gly | | | |
| 1 | 5 | 10 | 15 |
| His Val Arg Gly Pro Gly Pro Ser Val Gln His Thr Thr Leu Asn Gly | | | |
| 20 | 25 | 30 | |
| Asp Ser Leu Thr Ser Gln Leu Thr Leu Leu Gly Gly Asn Ala Arg Gly | | | |
| 35 | 40 | 45 | |
| Ser Phe Val His Ser Val Lys Pro Gly Ser Leu Ala Glu Lys Ala Gly | | | |
| 50 | 55 | 60 | |
| Leu Arg Glu Gly His Gln Leu Leu Leu Leu Glu Gly Cys Ile Arg Gly | | | |
| 65 | 70 | 75 | 80 |
| Glu Arg Gln Ser Val Pro Leu Asp Thr Cys Thr Lys Glu Glu Ala His | | | |
| 85 | 90 | 95 | |
| Trp Thr Ile Gln Arg Cys Ser Gly Pro Val Thr Leu His Tyr Lys Val | | | |
| 100 | 105 | 110 | |
| Asn | | | |

<210> 15
 <211> 417
 <212> DNA
 <213> Homo sapiens

<220>

<221> CDS

<222> (1)...(417)

<221> misc_feature

<222> 416, 417

<223> n = A,T,C or G

<400> 15

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| atg | ggg | gaa | ctg | tgc | cgc | agg | gac | tcc | gca | ctc | acg | gca | ctg | gac | gag | 48 |
| Met | Gly | Glu | Leu | Cys | Arg | Arg | Asp | Ser | Ala | Leu | Thr | Ala | Leu | Asp | Glu | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| gag | aca | ctg | tgg | gag | atg | atg | gag | agc | cac | cgc | cac | agg | atc | gta | cgc | 96 |
| Glu | Thr | Leu | Trp | Glu | Met | Met | Glu | Ser | His | Arg | His | Arg | Ile | Val | Arg | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| tgc | atc | tgc | ccc | agc | cgc | ctc | acc | ccc | tac | ctg | cgc | cag | gcc | aag | gtg | 144 |
| Cys | Ile | Cys | Pro | Ser | Arg | Leu | Thr | Pro | Tyr | Leu | Arg | Gln | Ala | Lys | Val | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ctg | tgc | cag | ctg | gac | gag | gag | gag | gtg | ctg | cac | agc | ccc | cgg | ctc | acc | 192 |
| Leu | Cys | Gln | Leu | Asp | Glu | Glu | Glu | Val | Leu | His | Ser | Pro | Arg | Leu | Thr | |
| | 50 | | | | | 55 | | | | 60 | | | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| aac | agc | gcc | atg | cgg | gcc | ggg | cac | ttg | ctg | gat | ttg | ctg | aag | act | cga | 240 |
| Asn | Ser | Ala | Met | Arg | Ala | Gly | His | Leu | Leu | Asp | Leu | Leu | Lys | Thr | Arg | |
| 65 | | | | | 70 | | | | 75 | | | | | 80 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ggg | aag | aac | ggg | gcc | atc | gcc | ttc | ctg | gag | agc | ctg | aag | ttc | cac | aac | 288 |
| Gly | Lys | Asn | Gly | Ala | Ile | Ala | Phe | Leu | Glu | Ser | Leu | Lys | Phe | His | Asn | |
| | | | 85 | | | | | 90 | | | | | | 95 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| cct | gac | gtc | tac | acc | ctg | gtc | acc | ggg | ctg | cag | cct | gat | gtt | gac | ttc | 336 |
| Pro | Asp | Val | Tyr | Thr | Leu | Val | Thr | Gly | Leu | Gln | Pro | Asp | Val | Asp | Phe | |
| | | 100 | | | | | | 105 | | | | | 110 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| agt | aac | ttt | agc | ggg | gag | agc | tcc | gac | ttt | gac | ggg | ttg | gca | ggc | act | 384 |
| Ser | Asn | Phe | Ser | Gly | Glu | Ser | Ser | Asp | Phe | Asp | Gly | Leu | Ala | Gly | Thr | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|-----|
| tct | agg | aac | ctc | agg | ctc | ctg | gta | acc | cca | gnn | | | | | | 417 |
| Ser | Arg | Asn | Leu | Arg | Leu | Leu | Val | Thr | Pro | Xaa | | | | | | |
| | 130 | | | | | 135 | | | | | | | | | | |

<210> 16

<211> 139

<212> PRT

<213> Homo sapiens

<220>

<221> VARIANT

<222> 139

<223> Xaa = Any Amino Acid

<400> 16

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Gly | Glu | Leu | Cys | Arg | Arg | Asp | Ser | Ala | Leu | Thr | Ala | Leu | Asp | Glu |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Glu | Thr | Leu | Trp | Glu | Met | Met | Glu | Ser | His | Arg | His | Arg | Ile | Val | Arg |
| | | 20 | | | | | | 25 | | | | | 30 | | |
| Cys | Ile | Cys | Pro | Ser | Arg | Leu | Thr | Pro | Tyr | Leu | Arg | Gln | Ala | Lys | Val |
| | 35 | | | | | | 40 | | | | | 45 | | | |
| Leu | Cys | Gln | Leu | Asp | Glu | Glu | Glu | Val | Leu | His | Ser | Pro | Arg | Leu | Thr |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Asn | Ser | Ala | Met | Arg | Ala | Gly | His | Leu | Leu | Asp | Leu | Leu | Lys | Thr | Arg |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Gly | Lys | Asn | Gly | Ala | Ile | Ala | Phe | Leu | Glu | Ser | Leu | Lys | Phe | His | Asn |
| | | | 85 | | | | | | 90 | | | | | 95 | |
| Pro | Asp | Val | Tyr | Thr | Leu | Val | Thr | Gly | Leu | Gln | Pro | Asp | Val | Asp | Phe |
| | | 100 | | | | | | 105 | | | | | 110 | | |
| Ser | Asn | Phe | Ser | Gly | Glu | Ser | Ser | Asp | Phe | Asp | Gly | Leu | Ala | Gly | Thr |
| | 115 | | | | | | 120 | | | | | 125 | | | |
| Ser | Arg | Asn | Leu | Arg | Leu | Leu | Val | Thr | Pro | Xaa | | | | | |
| | 130 | | | | | | 135 | | | | | | | | |

<210> 17

<211> 276

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(276)

<400> 17

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gag | gag | aca | ctg | tgg | gag | atg | atg | gag | agc | cac | cgc | cac | agg | atc | gta | 48 |
| Glu | Glu | Thr | Leu | Trp | Glu | Met | Met | Glu | Ser | His | Arg | His | Arg | Ile | Val | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| cgc | tgc | atc | tgc | ccc | agc | cgc | ctc | acc | ccc | tac | ctg | cgc | cag | gcc | aag | 96 |
| Arg | Cys | Ile | Cys | Pro | Ser | Arg | Leu | Thr | Pro | Tyr | Leu | Arg | Gln | Ala | Lys | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| gtg | ctg | tgc | cag | ctg | gac | gag | gag | gag | gtg | ctg | cac | agc | ccc | cgg | ctc | 144 |
| Val | Leu | Cys | Gln | Leu | Asp | Glu | Glu | Glu | Val | Leu | His | Ser | Pro | Arg | Leu | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| acc | aac | agc | gcc | atg | cgg | gcc | ggg | cac | ttg | ctg | gat | ttg | ctg | aag | act | 192 |
| Thr | Asn | Ser | Ala | Met | Arg | Ala | Gly | His | Leu | Leu | Asp | Leu | Leu | Lys | Thr | |
| | 50 | | | | | | 55 | | | | 60 | | | | | |
| cga | ggg | aag | aac | ggg | gcc | atc | gcc | ttc | ctg | gag | agc | ctg | aag | ttc | cac | 240 |
| Arg | Gly | Lys | Asn | Gly | Ala | Ile | Ala | Phe | Leu | Glu | Ser | Leu | Lys | Phe | His | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |

aac cct gac gtc tac acc ctg gtc acc ggg ctg cag 276
Asn Pro Asp Val Tyr Thr Leu Val Thr Gly Leu Gln
85 90

<210> 18
<211> 92
<212> PRT
<213> Homo sapiens

<400> 18
Glu Glu Thr Leu Trp Glu Met Met Glu Ser His Arg His Arg Ile Val
1 5 10 15
Arg Cys Ile Cys Pro Ser Arg Leu Thr Pro Tyr Leu Arg Gln Ala Lys
20 25 30
Val Leu Cys Gln Leu Asp Glu Glu Val Leu His Ser Pro Arg Leu
35 40 45
Thr Asn Ser Ala Met Arg Ala Gly His Leu Leu Asp Leu Leu Lys Thr
50 55 60
Arg Gly Lys Asn Gly Ala Ile Ala Phe Leu Glu Ser Leu Lys Phe His
65 70 75 80
Asn Pro Asp Val Tyr Thr Leu Val Thr Gly Leu Gln
85 90

<210> 19
<211> 2176
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (147) ... (1247)

<400> 19
atcatcagga agtgcacagg cgtccggcgt gctcctccct ccctgcagcc ccgggcagca 60
tctcccagag gctccgcggc ccaggctcct ggtgtgtctg cagtgcaggt ggctcctgga 120
agaccctcag cctgcctgct gaggcc atg tcg gac tac gag aac gat gac gag 173
Met Ser Asp Tyr Glu Asn Asp Asp Glu
1 5

tgc tgg aac gtc ctg gag ggc ttc cgg gtg acg ctc acc tcg gtc atc 221
Cys Trp Asn Val Leu Glu Gly Phe Arg Val Thr Leu Thr Ser Val Ile
10 15 20 25

gac ccc tca cgc atc aca cct tac ctg cgg cag tgc aag gtc ctg aac 269
Asp Pro Ser Arg Ile Thr Pro Tyr Leu Arg Gln Cys Lys Val Leu Asn
30 35 40

cct gat gat gag gag cag gtg ctc agc gac ccc aac ctg gtc atc cgc 317
Pro Asp Asp Glu Glu Gln Val Leu Ser Asp Pro Asn Leu Val Ile Arg
45 50 55

| | |
|---|-----|
| aaa cgg aaa gtg ggt gtg ctc ctg gac atc ctg cag cgg acc ggc cac | 365 |
| Lys Arg Lys Val Gly Val Leu Leu Asp Ile Leu Gln Arg Thr Gly His | |
| 60 65 70 | |
| aag ggc tac gtg gcc ttc ctc gag agc ctg gag ctc tac tac ccg cag | 413 |
| Lys Gly Tyr Val Ala Phe Leu Glu Ser Leu Glu Leu Tyr Tyr Pro Gln | |
| 75 80 85 | |
| ctg tac aag aag gtc aca ggc aag gag ccg gcc cgc gtc ttc tcc atg | 461 |
| Leu Tyr Lys Lys Val Thr Gly Lys Glu Pro Ala Arg Val Phe Ser Met | |
| 90 95 100 105 | |
| atc atc gac gcg tcc ggg gag tca ggc ctg act cag ctg ctg atg act | 509 |
| Ile Ile Asp Ala Ser Gly Glu Ser Gly Leu Thr Gln Leu Leu Met Thr | |
| 110 115 120 | |
| gag gtc atg aag ctg cag aag aag gtg cag gac ctg acc gcg ctg ctg | 557 |
| Glu Val Met Lys Leu Gln Lys Lys Val Gln Asp Leu Thr Ala Leu Leu | |
| 125 130 135 | |
| agc tcc aaa gat gac ttc atc aag gag ctg cgg gtg aag gac agc ctg | 605 |
| Ser Ser Lys Asp Asp Phe Ile Lys Glu Leu Arg Val Lys Asp Ser Leu | |
| 140 145 150 | |
| ctg cgc aag cac cag gag cgt gtg cag agg ctc aag gag gag tgc gag | 653 |
| Leu Arg Lys His Gln Glu Arg Val Gln Arg Leu Lys Glu Glu Cys Glu | |
| 155 160 165 | |
| gcc ggc agc cgc gag ctc aag cgc tgc aag gag gag aac tac gac ctg | 701 |
| Ala Gly Ser Arg Glu Leu Lys Arg Cys Lys Glu Glu Asn Tyr Asp Leu | |
| 170 175 180 185 | |
| gcc atg cgc ctg gcg cac cag agt gag gag aag ggc gcc gcg ctc atg | 749 |
| Ala Met Arg Leu Ala His Gln Ser Glu Glu Lys Gly Ala Ala Leu Met | |
| 190 195 200 | |
| cgg aac cgt gac ctg cag ctg gag att gac cag ctc aag cac agc ctc | 797 |
| Arg Asn Arg Asp Leu Gln Leu Glu Ile Asp Gln Leu Lys His Ser Leu | |
| 205 210 215 | |
| atg aag gcc gag gac gac tgc aag gtg gag cgc aag cac acg ctg aag | 845 |
| Met Lys Ala Glu Asp Asp Cys Lys Val Glu Arg Lys His Thr Leu Lys | |
| 220 225 230 | |
| ctc agg cac gcc atg gag cag cgg ccc agc cag gag ctg ctg tgg gag | 893 |
| Leu Arg His Ala Met Glu Gln Arg Pro Ser Gln Glu Leu Leu Trp Glu | |
| 235 240 245 | |
| ctg cag cag gag aag gcc ctg ctc cag gcc cgg gtg cag gag ctg gag | 941 |
| Leu Gln Gln Glu Lys Ala Leu Leu Gln Ala Arg Val Gln Glu Leu Glu | |
| 250 255 260 265 | |
| gcc tcc gtc cag gag ggg aag ctg gac agg agc agc ccc tac atc cag | 989 |

Ala Ser Val Gln Glu Gly Lys Leu Asp Arg Ser Ser Pro Tyr Ile Gln
270 275 280

gta ctg gag gag gac tgg cgg cag gcg ctg cgg gac cac cag gag cag 1037
Val Leu Glu Glu Asp Trp Arg Gln Ala Leu Arg Asp His Gln Glu Gln
285 290 295

gcc aac acc atc ttc tcc ctg cgc aag gac ctc cgc cag ggc gag gcc 1085
Ala Asn Thr Ile Phe Ser Leu Arg Lys Asp Leu Arg Gln Gly Glu Ala
300 305 310

cga cgc ctc cgg tgc atg gag gag aag gag atg ttc gag ctg cag tgc 1133
Arg Arg Leu Arg Cys Met Glu Glu Lys Glu Met Phe Glu Leu Gln Cys
315 320 325

ctg gca cta cgt aag gac tcc aag atg tac aag gac cgc atc gag gcc 1181
Leu Ala Leu Arg Lys Asp Ser Lys Met Tyr Lys Asp Arg Ile Glu Ala
330 335 340 345

atc ctg ctg cag atg gag gag gtc gcc att gag cgg gac cag agc aca 1229
Ile Leu Leu Gln Met Glu Glu Val Ala Ile Glu Arg Asp Gln Ser Thr
350 355 360

caa atg gag ggg ctg tga ccagcctccg cgcccagcgg cttgacgtcc 1277
Gln Met Glu Gly Leu *
365

tccggagcct ctgcttgagg ttgggcggcc gggccgaggg cccagggcaa gcttggggcc 1337
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<210> 20

<211> 366

<212> PRT

<213> Homo sapiens

<400> 20

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Phe Arg Val Thr Leu Thr Ser Val Ile Asp Pro Ser Arg Ile Thr Pro
20 25 30

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Leu | Arg | Gln | Cys | Lys | Val | Leu | Asn | Pro | Asp | Asp | Glu | Glu | Gln | Val |
| | 35 | | | | | | 40 | | | | | 45 | | | |
| Leu | Ser | Asp | Pro | Asn | Leu | Val | Ile | Arg | Lys | Arg | Lys | Val | Gly | Val | Leu |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Leu | Asp | Ile | Leu | Gln | Arg | Thr | Gly | His | Lys | Gly | Tyr | Val | Ala | Phe | Leu |
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| Glu | Ser | Leu | Glu | Leu | Tyr | Tyr | Pro | Gln | Leu | Tyr | Lys | Lys | Val | Thr | Gly |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Lys | Glu | Pro | Ala | Arg | Val | Phe | Ser | Met | Ile | Ile | Asp | Ala | Ser | Gly | Glu |
| | | 100 | | | | | | 105 | | | | | 110 | | |
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| Lys | Val | Gln | Asp | Leu | Thr | Ala | Leu | Leu | Ser | Ser | Lys | Asp | Asp | Phe | Ile |
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| Lys | Glu | Leu | Arg | Val | Lys | Asp | Ser | Leu | Leu | Arg | Lys | His | Gln | Glu | Arg |
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| Val | Gln | Arg | Leu | Lys | Glu | Glu | Cys | Glu | Ala | Gly | Ser | Arg | Glu | Leu | Lys |
| | | | | 165 | | | | | 170 | | | | | 175 | |
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| | | 180 | | | | | 185 | | | | | | 190 | | |
| Ser | Glu | Glu | Lys | Gly | Ala | Ala | Leu | Met | Arg | Asn | Arg | Asp | Leu | Gln | Leu |
| | 195 | | | | | | 200 | | | | | 205 | | | |
| Glu | Ile | Asp | Gln | Leu | Lys | His | Ser | Leu | Met | Lys | Ala | Glu | Asp | Asp | Cys |
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| Lys | Val | Glu | Arg | Lys | His | Thr | Leu | Lys | Leu | Arg | His | Ala | Met | Glu | Gln |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Arg | Pro | Ser | Gln | Glu | Leu | Leu | Trp | Glu | Leu | Gln | Gln | Glu | Lys | Ala | Leu |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Leu | Gln | Ala | Arg | Val | Gln | Glu | Leu | Glu | Ala | Ser | Val | Gln | Glu | Gly | Lys |
| | | 260 | | | | | 265 | | | | | | 270 | | |
| Leu | Asp | Arg | Ser | Ser | Pro | Tyr | Ile | Gln | Val | Leu | Glu | Glu | Asp | Trp | Arg |
| | 275 | | | | | | 280 | | | | | 285 | | | |
| Gln | Ala | Leu | Arg | Asp | His | Gln | Glu | Gln | Ala | Asn | Thr | Ile | Phe | Ser | Leu |
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| Arg | Lys | Asp | Leu | Arg | Gln | Gly | Glu | Ala | Arg | Arg | Leu | Arg | Cys | Met | Glu |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Glu | Lys | Glu | Met | Phe | Glu | Leu | Gln | Cys | Leu | Ala | Leu | Arg | Lys | Asp | Ser |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Lys | Met | Tyr | Lys | Asp | Arg | Ile | Glu | Ala | Ile | Leu | Leu | Gln | Met | Glu | Glu |
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| Val | Ala | Ile | Glu | Arg | Asp | Gln | Ser | Thr | Gln | Met | Glu | Gly | Leu | | |
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<211> 281

<212> DNA

<213> Homo sapiens

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 ctggaggggt tccgggtgac gtcacctcg gtcacgcacc cctcacgcat cacaccttac 180

ctgcggcagt gcaaggtcct gaaccccgat gatgaggagc aggtgctcag cgaccccaac 240
ctgggtcatcc gcaaacggaa agtgggtgtg ctctggaca t 281

<210> 22

<211> 734

<212> DNA

<213> Gallus gallus

<400> 22

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ccagacagag cgaggagaag agcagtgcc tcatgaagaa cagggacctg ctctagaga 180
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tccagcagga gaaggagctg cttttggcca agaatacagga gctggagaac actcttcagg 360
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gccagggtgct ggagcgccag gacctgctga acacctgta ccaccttcgc aaggagctgc 480
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tgcgagagc gcccgcgggc ccgcccgcgg gaggcgact gggagccgag cacgggcagc 660
gacaacacgg acaccgaggg cagctagggg ccggccgagc tttcgagttt gcagctggat 720
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<210> 23

<211> 630

<212> DNA

<213> Gallus gallus

<400> 23

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tgtataaaaa acggatggaa gctgtcttag agcagatgga ggaagtggct tcggaaagag 180
accaggcact gctgaccaga gaacagttct acccacagta ctccaagaac cttgttgaga 240
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tggagctgcc tgcactgact tctgacctgg atgacactcc tccagagatc ccaggtctta 420
ctctcatggt catctagacg aagatcgcac ctgactaaaa aagacgctgt taaggaaaac 480
cagcaatcag catgcaagaa acatctgacg cagatcacca cttcgaggat gcactaacca 540
caagacttcg agaagacgga gagataagga tgcttgagcg tacgagtcgg ccgatccgcg 600
ccccccctcc gcgctccttc cgtggctcgt 630

<210> 24

<211> 331

<212> DNA

<213> Homo sapiens

<400> 24

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gcgggagcgg gaccaggcct tccactccc agatgaagct cagacacagt actcgagtg 120
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gatgaggatc gagatggtgc ggcgggaggc ctgcacgtgc aacctggaga gcaagctgcg 240
gcgcctctcc aaggacagca acaacctgga ccagagtctg cccaggaacc tgccagtaac 300
catcatctct caggactttg gggatgccag c 331

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<211> 478
<212> DNA
<213> Homo sapiens

<400> 25
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cagccccctc cgggccctgc agccccctgg cgggcggcgc ccctcggagg acggctccgg 120
gcccggggggg acggagggcc tggtcgcctg gaggaagccg gaggcctgcg tggaggaggc 180
gccccgcgca gctggctggc ggagcatgag cgccccagat cccaagcact gcaagtccag 240
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ccccaatggc gggatagcag cccctgtgtg tgagcacccc tccatgccag gaggagggcc 360
agagatggat gactacatgg agaccctgaa ggatgaagag gacccttgt gggacaatgt 420
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<210> 26
<211> 396
<212> DNA
<213> Homo sapiens

<400> 26
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cccgggggga cggagggcct ggtcgcctgg aggaagccgg acgctgcgtg gaggaggcgc 120
ccccgggtctg gtctggcgga cgatgagcgc ccagatccc aagcactgca agtccagatg 180
caacggggagc ctggctcaag ggacgacaag atccagccgg aaagtgtaga agtcacaccc 240
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gatggatgac tacatggaga cgctgaatga tgaagaggac gccttgtggg agaatgtgga 360
gtgtaaccgg cacatgctca gccgctatat caaccc 396

<210> 27
<211> 162
<212> DNA
<213> Homo sapiens

<400> 27
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cttgtgggtg aatgtggagt gtaaccggca catgctcagc cgggtctcac gaattccgct 120
gagttctcac gaattccgct gaggtctcac gaattccgct ga 162

<210> 28
<211> 418
<212> DNA
<213> Homo sapiens

<400> 28
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caagatgcag cccccccgga gccgcagcag catcatgtca atcaccgccg agccccggg 120
aaacgactcc atcgtcagac gctacaagga ggacgcgcc catcgcagca cagtccaaga 180
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tgctacgac ctggagcagg tcaacctcat gttcaggaag ttctctctgg aaagaccctt 360
ccggccttcg gtcacctctg tggggcacgt tgggggccca aggcctcgg tgcagcac 418

<210> 29
<211> 610
<212> DNA
<213> Homo sapiens

<400> 29
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gcgaggagca gcgcaagacc atctgggtgg acgaggacca gctgtgaggc gggcgccctg 600
ggcagagaga 610

<210> 30
<211> 556
<212> DNA
<213> Homo sapiens

<220>
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<222> 470
<223> n = A,T,C or G

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agttcaccat ctgcaagtca gatatcgta caagagatga gttcctcaga aggcagaaga 180
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cgagagcagc gcaaga 556

<210> 31
<211> 390
<212> DNA
<213> Homo sapiens

<400> 31
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agctcttgac tgagaagcag gaagagctgg accctgagag cgagctgggc aagaacctca 180
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agacggagac catcatctac tcccagagaga

390

<210> 32

<211> 620

<212> DNA

<213> Homo sapiens

<400> 32

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aacatcaaga ggttcagaaa gctgctgccc cggcctgaga cggaggagga gttcctgcgc 120
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gcaaagaacg ccaagccggg aggcccaagc cagccggggt ctcgaggggg ggcccgggtc 600
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<210> 33

<211> 283

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

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<223> n = A,T,C or G

<400> 33

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gcgtgtgccg gctgaaggng aaggagctgg aggccttgcc gtgcctgtac gcgacgggtg 180
aacctgacat gtggggcagc gtagaggagc tgctccgcgt tntataagga caagatcggg 240
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<210> 34

<211> 207

<212> DNA

<213> Homo sapiens

<400> 34

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tgaagagcac gggccggcgg cgctcgagc agaaggcgcg taccaggctg taggggatga 180
ggctgagggt cttgcccagc tcgctct                                     207
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<210> 35

<211> 192

<212> DNA

<213> Homo sapiens

<400> 35
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atcaagaggt tcagaaagct gctgccccgg cctgagactg gaggaggagt tcctgcgcgt 120
gtgccggctg aaggagaagg agctggaggc cctgcgatgc ctgtacgcca cggtggaacc 180
tgacatgtgg gg 192

<210> 36
<211> 605
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 213
<223> n = A,T,C or G

<400> 36
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<210> 37
<211> 1141
<212> DNA
<213> Homo sapiens

<400> 37
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catgcacagt accaccaaac ccatgagcgc tactacaacc catgggtcac cagggcatga 540
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aagaagggttg acactgaaag acacacatat gagtataact cgagtatgca acgtgaacat 1140
g 1141